Police Injuries in Profile

Lyons, Kate; Orr, Rob Marc; Pope, Rodney R; Stierli, Michael

Police injuries in profile

[1]Kate Lyons, [2]Rob Orr, [3]Rodney Pope, [4]Mick Stierli

[1]HSM, Bond University

[2]Tactical Research Unit - North, Bond University

[3]Tactical Research Unit - South, Charles Sturt University

[4]NSW Police

Introduction

- In tactical populations such as the military and fire-fighters the lower extremity contributes between 31.7% and 66.5%.

- In the current law enforcement literature the lower extremity contributes between 13.2% and 29.7%.





Introduction

- Law enforcement personnel are required to perform tasks carrying loads which can range from 3-15kg.

- They can be required to perform arduous tasks in situations that are unpredictable and can be life threatening in some circumstances.

- Therefore they may be at a higher risk of musculoskeletal injury when compared to many other occupations.

Aim

- To determine the musculoskeletal profile of lower extremity injuries within a state law enforcement agency.

BOND UNIVERSITY
TACTICAL RESEARCH UNIT

Methods

- Retrospective cohort study
- Data were collected by the NSW Police Force over a 7-year period (2009 - 2016). Data not meeting the specific definitions for musculoskeletal injury were excluded using a tiered system with data cleaned to ensure no incomplete entries and recoded to improve data integrity.
- Ethics approved by Bond University HREC, Protocol Number RO15360, with compliant consent waiver





Methods

- Definitions
  - Injury: ‘harm to the body which occurred as a result of energy applied to the body whilst on duty’
  - MSK injuries: ‘injuries/incidents of a musculoskeletal nature, affecting the muscles, nerves, tendons, joints and cartilage’
  - Lower extremity: ‘injuries to toe/s, foot, ankle, knee, groin, hip/s, leg-upper, leg-lower and leg-not classified’

Methods

- Data Analysis
  - Initially completed descriptively
    - Frequencies determined and means with standard deviations (SD) where applicable
  - Chi-square tests of independence (R x C)
    - Key descriptive variables between genders
  - Cramer's V then calculated
    - Strength of any significant association
    - Level of significance set at < .001



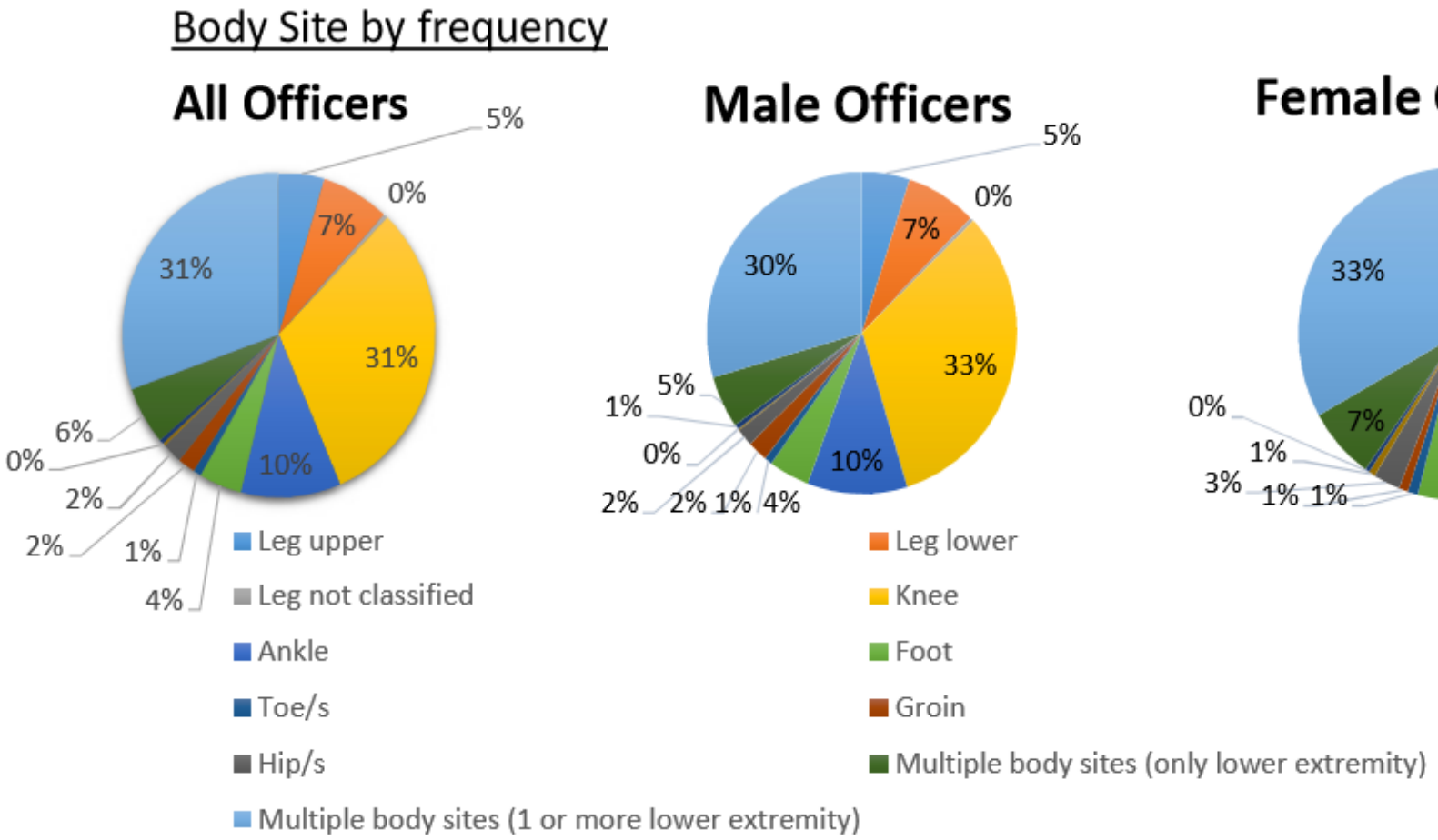


Results

Of the initial 65,579 incidents:

- 12,452 (19%) were musculoskeletal lower limb incidents.
- The knee was the most commonly injured site (31.4%)
- Sprains and strains where the most common nature of injury (42.3%)
- Arresting offenders (24.2%) was the most common cause of injury.
- Slips/trips/falls (37.8%) were found to be the most common cause of injury

Results


Body Site by frequency
All Officers
5%
0%
7%
31%
31%
6%
0%
10%
2%
2%
1%
4%
Male Officers
5%
0%
7%
30%
33%
5%
1%
0%
10%
2%
2%
1%
4%
Female Officers
4%
6%
0%
33%
29%
0%
7%
1%
10%
3%
1%
1%
5%
Leg upper
Leg lower
Leg not classified
Knee
Ankle
Foot
Toe/s
Groin
Hip/s
Multiple body sites (only lower extremity)
Multiple body sites (1 or more lower extremity)

Results

- Variations were found between gender. Most notably within the incident activity ($p<.001$), where males had a 10.6% higher rate for arresting an offender and females an 8.6% higher rate for walking/running.

- The mean number of hours worked prior to injury was 6.12±3.96, mean shift length = 10.34±3.52 hours.

Discussion

- The leading sites of injuries (knees and ankles) were similar to that of other tactical populations.

- The tendency for injuries to occur later in a shift suggest that fatigue may play a part.

Discussion

- For any Police Force unit, injuries have consequences that can range from a couple of days for recovery and rehabilitation to longer periods of with many lost working days and increased future injury risk.

- Evidence based lower extremity injury reduction measures and return-to-work protocols may be of use in this population. Work hardening should include specific tasks (like arresting an offender) and progress to functionality over a full shift length.





References

1. Achterstraat, P. (2008). Managing Injured Police: NSW Police Force. Auditor-General. Sydney.
2. Andersen, K. A., et al. (2016). "Musculoskeletal Lower Limb Injury Risk in Army Populations." Sports Medicine - Open **2**: 22.
3. Bonneau, J. and J. Brown (1995). "Physical ability, fitness and police work." Journal of Clinical Forensic Medicine **2**(3): 157-164.
4. Davidson, P. L., et al. (2008). "Lower limb injuries in New Zealand Defence Force personnel: descriptive epidemiology." Autralian and New Zealand Journal of Public Health **32**(2): 167-173.
5. Dempsey, P. C., et al. (2014). "Body armour: the effect of load, exercise and distraction on landing forces." Journal Of Sports Sciences **32**(4): 301-306.

BOND UNIVERSITY
TACTICAL RESEARCH UNIT





References

6. Holloway-Beth, A., et al. (2016). "Occupational Injury Surveillance Among Law Enforcement Officers Using Workers' Compensation Data, Illinois 1980 to 2008." Journal of Occupational and Environmental Medicine **58**(6): 594-600.
7. Pryor, R. R., et al. (2012). "Fitness characteristics of a suburban special weapons and tactics team." The Journal of Strength & Conditioning Research **26**(3): 752-757.
8. Ramstrand, N., et al. (2016). "Evaluation of load carriage systems used by active duty police officers: relative effects on walking patterns and perceived comfort." Applied ergonomics **53**: 36-43.
9. Sullivan, C. S. B. and K. T. Shimizu (1988). "Epidemiological studies of work-related injuries among law enforcement personnel." Journal of the Society of Occupational Medicine **38**(1-2): 33-40.
10. Taylor, N. A. S., et al. (2015). "A Retrospective Evaluation of Injuries to Australian Urban Firefighters (2003 to 2012): Injury Types, Locations, and Causal Mechanisms." Journal of Occupational and Environmental Medicine **57**(7): 757-764.

BOND UNIVERSITY
TACTICAL RESEARCH UNIT